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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

First Named Inventor :	Yukiko Kubota	
Appln. No.:	10/650,302	Group Art Unit: 1773
Filed :	August 28, 2003	
For :	HIGH MOMENT DIRECTIONALLY TEXTURED SOFT MAGNETIC UNDERLAYER IN A MAGNETIC STORAGE MEDIUM	Examiner: Holly C. Rickman
Docket No.:	S01.12-0965/STL 11036.00	

RESPONSE TO NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF

I HEREBY CERTIFY THAT THIS PAPER IS BEING SENT BY U.S. MAIL, FIRST CLASS, TO THE COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450, THIS

27 DAY OF June, 2007.

PATENT ATTORNEY

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

This is in response to the Notification of Non-Complaint Appeal Brief mailed June 6, 2007. Enclosed with this Response is a paper providing a summary of the claimed subject matter as required to correct this informality.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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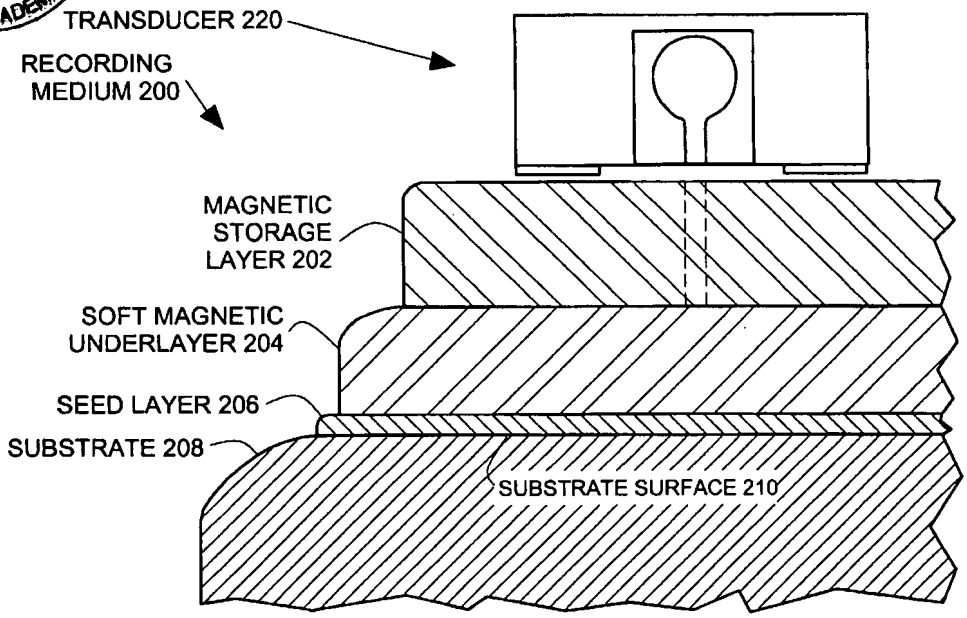
DDB/DCB/elk
Enclosure

Corrected Replacement Summary Section (V)

(v) SUMMARY OF CLAIMED SUBJECT MATTER

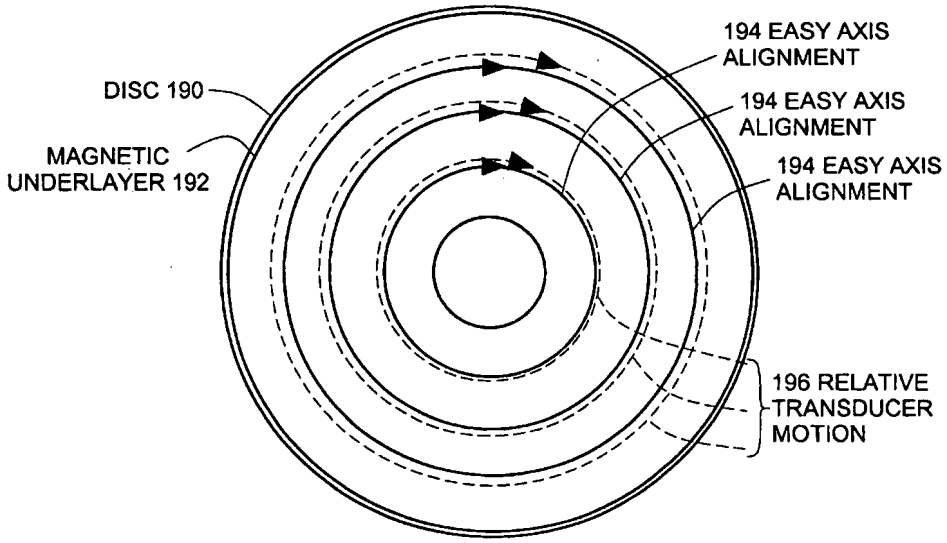


As illustrated in cross-section above and in FIG. 5 of the specification, a magnetic recording medium 200 comprises a substrate 208 that has a substrate surface 210. A seed layer 206 is disposed on the substrate surface 210.

A soft magnetic underlayer 204 is disposed on the seed layer 206. The soft magnetic underlayer 204 has a texture that provides a magnetic easy axis alignment parallel to a line of relative motion of a transducer 220. A magnetic storage layer 202 is disposed on the soft magnetic underlayer 204.(FIG. 5 and specification, page 10, line 16 through page 12, line 12.)

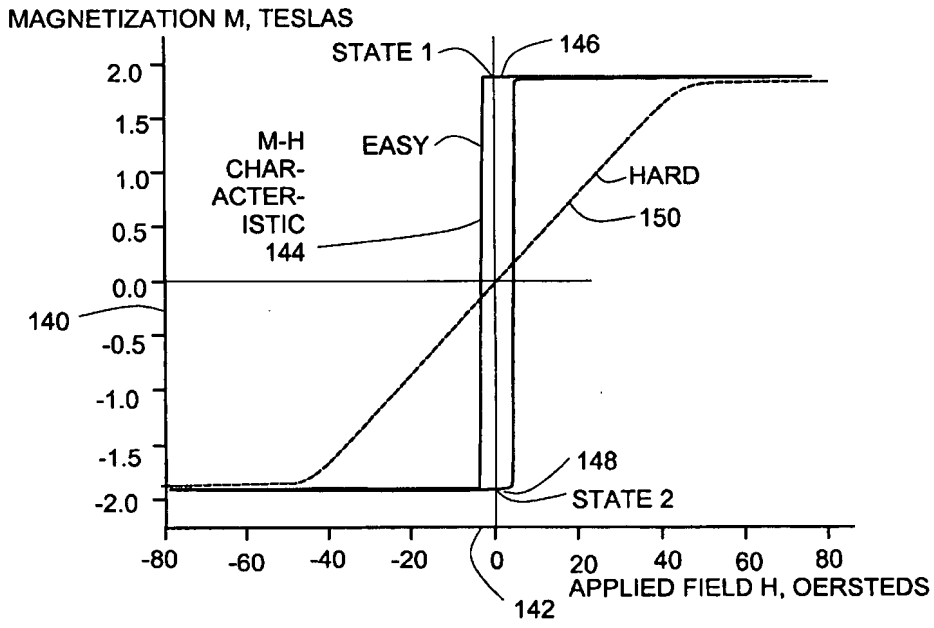
The applied field (magnetic flux) from a transducer (write head) flows through a closed magnetic circuit from a narrower single pole on the transducer head, through a recording element of the magnetic storage layer 202, through the soft underlayer, and then back to a wider return pole on the transducer head. (Specification page 5, lines 19-22).

Corrected Replacement Summary Section (V)



As illustrated above and in FIG. 4 of the specification, a disc 190 includes a magnetic underlayer 192 that has a circumferential easy axis alignment (solid lines 194) that is parallel to circumferential relative motion (dashed lines 196) of a transducer.(FIG. 4 and specification, page 9, line 3 through page 10 line 2). Circumferential easy axis alignment comprises a means for texturing a soft magnetic underlayer to provide alignment with a circumferential line of relative transducer motion in a disc drive.

The soft magnetic underlayer 204 comprises a magnetic material that has a texture and that has a magnetic moment that is larger than 1.7 teslas.(Specification page 4, lines 27-29.)



Corrected Replacement Summary Section (V)

As shown above and in FIG. 2 of the specification, a static M-H characteristic 144 along the easy axis alignment is illustrated as a graph of magnetization M in teslas (axis 140) of the soft underlayer material as a function of an applied magnetic field H in oersteds (axis 142). The applied magnetic field is generated by the transducer 220 (FIG. 5). The M-H characteristic 144 includes saturation states STATE 1 and STATE 2 that correspond with the magnetic moment of the soft underlayer material. In the example of FIG. 2, a magnetic moment of approximately 1.9 teslas is shown. Between the saturation states, the soft underlayer material exhibits a high magnetic permeability, as illustrated by steep vertical slopes of the static M-H characteristics.(FIG. 2 and specification page 7, line 12 through page 8, line 2.)

Use of a conventional soft underlayer with relatively low magnetic moment in the range of less than 1.7 teslas leads to a requirement for an excessively thick soft underlayer in a thickness range of about 200-400 nanometers thickness. The large thickness induces a large surface roughness which interferes with small transducer-to-media spacing requirements for high density recording.

Applicants have found that treating the soft underlayer to increase its magnetic moment to be larger than 1.7 teslas along the easy axis, and preferably larger than 2.0 teslas improves the performance of the soft underlayer material such that its thickness can be reduced to less than 200 nanometers, thus avoiding excessive interference with small transducer-media spacings. (Specification, page 10, lines 5-15).

As suggested by the Examiner in section 10 of the Notification of Non-Compliant Appeal Brief of January 9, 2007, applicant is herewith providing mappings of the independent claims 1 and 18 on appeal. The mappings are shown below. All of the features of Claim 1 are disclosed in the specification at page 3, lines 2-12 as shown in the appended mapping of Claim 1. All of the features of Claim 18 are disclosed in the specification at page 3, lines 2-12 and page 12, lines 11-12 as shown in the appended mapping of Claim 18.

18. (original) A method of manufacturing a magnetic recording medium for communication with a transducer moving relative to the recording medium along a line of relative transducer motion, comprising:

Specification, Page 3, lines 2-4:
"Disclosed is a magnetic recording medium for communication with a transducer moving relative to the recording medium along a line of relative transducer motion."
A magnetic recording medium 200, and a transducer 220 are shown in FIG. 5. Lines of relative transducer motion 196 are shown in FIG. 4.

providing a substrate having a substrate surface;

depositing a seed layer on the substrate surface;

Specification, Page 3, lines 5-6: "The magnetic recording medium comprises a substrate having a substrate surface and a seed layer disposed on the substrate surface."
A substrate 208, a substrate surface 210, and a seed layer 206 are shown in FIG. 5.

depositing a soft magnetic underlayer on the seed layer, the soft magnetic underlayer comprising a magnetic material having a magnetic moment larger than 1.7 teslas, the soft magnetic underlayer having a texture that provides a magnetic easy axis that has an easy axis alignment parallel to the line of relative transducer motion; and

Specification, Page 3, lines 6-11: "The magnetic recording medium also comprises a soft magnetic underlayer disposed on the seed layer. The soft magnetic underlayer comprises a magnetic material having a magnetic moment larger than 1.7 teslas. The soft magnetic underlayer has a texture that provides a magnetic easy axis that has an easy axis alignment parallel to the line of relative transducer motion."

A soft magnetic underlayer 204 is shown in FIG. 5.
A magnetic easy axis 194 is shown parallel to a line 196 of relative transduder motion in FIG. 4.

depositing a magnetic storage layer on the soft magnetic underlayer.

Specification, Page 3, lines 11-12: "A magnetic storage layer is disposed on the soft magnetic underlayer."
A magnetic storage layer 202 is shown in FIG. 5.

Specification, Page 12, lines 11-12: "The layers 202, 204, 206 can be deposited using known thin film deposition techniques."

Mapping of Claim 18 to the specification and drawings, explaining the subject matter defined in Claim 18

1.(original) A magnetic recording medium for communication with a transducer moving relative to the recording medium along a line of relative transducer motion, comprising:	Specification, Page 3, lines 2-4: "Disclosed is a magnetic recording medium for communication with a transducer moving relative to the recording medium along a line of relative transducer motion." A magnetic recording medium 200, and a transducer 220 are shown in FIG. 5. Lines of relative transducer motion 196 are shown in FIG. 4.
a substrate having a substrate surface; a seed layer disposed on the substrate surface;	Specification, Page 3, lines 5-6: "The magnetic recording medium comprises a substrate having a substrate surface and a seed layer disposed on the substrate surface." A substrate 208, a substrate surface 210, and a seed layer 206 are shown in FIG. 5.
a soft magnetic underlayer disposed on the seed layer, the soft magnetic underlayer comprising a magnetic material having a magnetic moment larger than 1.7 Teslas, the soft magnetic underlayer having a texture that provides a magnetic easy axis that has an easy axis alignment parallel to the line of relative transducer motion; and	Specification, Page 3, lines 6-11: "The magnetic recording medium also comprises a soft magnetic underlayer disposed on the seed layer. The soft magnetic underlayer comprises a magnetic material having a magnetic moment larger than 1.7 teslas. The soft magnetic underlayer has a texture that provides a magnetic easy axis that has an easy axis alignment parallel to the line of relative transducer motion." A soft magnetic underlayer 204 is shown in FIG. 5. A magnetic easy axis 194 is shown parallel to a line 196 of relative transduder motion in FIG. 4.
a magnetic storage layer disposed on the soft magnetic underlayer.	Specification, Page 3, lines 11-12: "A magnetic storage layer is disposed on the soft magnetic underlayer." A magnetic storage layer 202 is shown in FIG. 5.

Mapping of Claim 1 to the specification and drawings, explaining the subject matter defined in Claim 1